

REMARKS

This responds to the Office Action dated February 16, 2007.

Claim 1 is amended, and claim 6 is canceled. Claims 1-5 and 7-17 are now pending in this application.

§103 Rejection of the Claims

Claims 1-7 and 9-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Levine et al. (U.S. Patent No. 6,748,274) in view of Samuelsson et al. (U.S. 7,050,857). Claims 8 and 17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Levine et al. (U.S. Patent No. 6,748,274) in view of Samuelsson et al. (U.S. 7,050,857) in view of Palmer et al. (U.S. Patent No. 5,830,150). The rejections are traversed and reconsideration is respectfully requested.

Claim 1, before being amended herein, recited a system in which representative electrograms for a plurality of defined time periods are collected and displayed in aggregate fashion with the representative electrograms being overlain upon one another. The recited system enables a clinician to easily ascertain changes in electrogram morphology by visual inspection and thus monitor a patient's clinical status as reflected by morphology changes in the patient's electrogram waveform. The Levine reference appears to describe a system that displays electrograms in conjunction with event markers representing sensed or paced events in the four chambers of the heart. The Samuelsson reference appears to describe a system that displays electrograms in conjunction with operating parameters of an implantable pacing device. Neither reference, however, describes or suggests the collection and display of electrograms in the manner recited by claim 1. The Office Action asserts that Levine discloses compiling electrogram data with respect to time and with respect to heart rate and also discloses the time stamping of events. The simple time stamping of events or measuring of heart rates, however, is not what is meant by the recitations of claim 1. Claim 1 has been amended herein to more clearly recite that what is meant by "representative electrograms with respect to time" are representative electrograms corresponding to different time periods where each such representative electrogram is derived from one or more electrograms recorded during the defined time period corresponding to that particular representative electrogram. For example,

representative electrograms could be computed for each week over some period of time with each such representative electrogram being an average of electrograms recorded during a particular week.

Applicant has further amended claim 1 recite that the representative electrograms derived only from electrograms recorded when a measured heart rate is within a specified range. This limitation was formerly recited by claim 6 which has been cancelled herein. In rejecting claims 6 and 9, the Office Action points to col. 15, lines 5-13 and col. 15, line 67 to col. 16, line 3 of Levine as disclosing representative electrograms being derived as a function of time or heart rate. The cited portions of Levine, however, only describe the display of data collected during different time periods and the averaging of electrograms collected from different channels. Applicant finds no description relating to the averaging of electrograms collected during different time periods and displaying those averaged electrograms in aggregate fashion as recited by claim 1. Furthermore, Applicant finds no discussion or suggestion of only using electrograms recorded when the heart rate is within a specified range to compute the representative electrograms. As explained in the specification, computing representative electrograms in this manner eliminates the variability in the morphology of representative electrograms which is due to heart rate.

Claim 11 recites a system in which representative electrograms for a plurality of defined heart rate ranges are collected and displayed in aggregate fashion with the representative electrograms being overlain upon one another. That is, each representative electrogram is derived from (e.g., by averaging) electrograms recorded only when the heart rate is within the particular heart rate range that the representative electrogram is intended to represent. Collecting and displaying such representative electrograms in this manner enables a clinician to readily ascertain how the morphology of a patient's electrograms changes with respect to heart rate. As noted above, Applicant finds no description in the cited references that relates to the system recited by claim 11.

For the reasons given above, Applicant believes that claims 1 and 11 are patentable over the prior art of record. Applicant further believes that the recitations of dependent claims 2-5, 7-10, and 12-17, in the context of their combination with the recitations of claims 1 or 11 are neither taught nor suggested by the references of record. Also, with respect to the rejections of

claims 8 and 17, Applicant wishes to point out in particular that the color coding discussed in the Palmer reference appears to be the varying of the color a displayed signal in accordance with the magnitude of the signal. This is completely different from what is recited by claims 8 and 17. Claims 8 and 17 recite that the representative electrograms are displayed as a graph of magnitude versus time or sample number with a shading or color of the graph identifying the defined time period or heart rate range, respectively, represented by the representative electrogram. That is, different colors are used for different representative electrograms, but the color of a particular representative electrogram is constant and does not vary with the magnitude of the electrogram.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 10/723,254

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Title: MORPHOLOGY-BASED DIAGNOSTIC MONITORING OF ELECTROGRAMS BY IMPLANTABLE CARDIAC DEVICE

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CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (847) 432-7302 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

DAVID J. YONCE ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(847) 432-7302

Date July 16, 2007

By / J. Kevin Parker /
J. Kevin Parker
Reg. No. 33,024

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 16 day of July 2007.

Rite Ganson
Name

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Signature